

DOCKET NO: 245637US0

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
TAKASHI TATSUMI ET AL : EXAMINER: NAGUBANDI, L.
SERIAL NO: 10/716,427 :
FILED: NOVEMBER 20, 2003 : ART UNIT: 1621
FOR: MESOPOROUS SILICA AND PROCESS FOR PRODUCING THE SAME

DECLARATION UNDER 37 C.F.R. § 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes Toshiyuki Yokoi who deposes and states:

1. That I am an inventor of the above-identified application.
2. That I am a graduate of Yokohama National University, and received my Ph.D. degree in the field of Engineering in the year 2004.
3. That I have been employed as an Assistant Professor at Tokyo Institute of Technology, Chemical Resources Laboratory since April 2006.
4. That I am an inventor of the above-identified application.
5. That I understand the English language or, at least, that the contents of the Declaration were made clear to me prior to executing the same.
6. That the following experiments were performed by me or under my direct supervision.
7. That Example 10 of the above-identified application was repeated except that a cationic surfactant, dodecyltrimethylammonium bromide, was used instead of the anionic

surfactant, sodium dodecyl sulfate (SDS), utilized in the original example and representing the presently claimed invention. Dodecyltrimethylammonium bromide was selected as the comparative cationic surfactant due to the conservation of the dodecyl (C12) tail with respect to the anionic surfactant SDS.

Specifically, in modified Example 10 the following protocol was followed:

0.1 mole of Dodecyltrimethylammonium bromide was added to a mixed solvent of ion-exchanged water and ethanol, and stirred at 60°C until the mixture became a uniform solution. Then, a mixture of 0.3 mole of 3-aminopropyltriethoxysilane (APTES) and 0.7 mole of tetraethyl orthosilicate (TEOS) was added to the solution, and further stirred for 1 hour. The aqueous solution was left at 100°C for 2 days after the stirring. However, no precipitate was observed.

8. That the direct comparison of Example 10 (see Table 1 on page 27) and the cationic surfactant example reported in paragraph 7 above is provided in the following table:

	Mole ratio of Components			Comments on regularity of silica structure		
	(A)	(B)	(C)	Complex	Outer shell	Porous silica
Example 10	0.1	0.7	0.3	OO	OO	OO
Cationic Surfactant Example	0.1	0.7	0.3	× (No precipitates)	-	-

OO: Particularly sharp powder X-ray peak was observed.

(A) represents the surfactant, either SDS (Ex. 10) or dodecyltrimethylammonium bromide (Cationic Surfactant Example).

(B) represents TEOS.

(C) represents APTES.

9. That the foregoing represents an unexpected result in that the combination of (A) an anionic surfactant, (B) silicate monomer, and (C) basic silane provides particularly sharp

powder X-ray peaks for each of the complex, the outer shell, and the porous silica as compared to the combination of (1) a cationic surfactant, (2) silicate monomer, and (3) basic silane, which resulted in no precipitate formation. This result is not disclosed, suggest, or expected from the art of record in the above-identified application.

10. I declare further that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

11. Further Declarant saith not.

Toshiyuki Yokoi
Name: Toshiyuki Yokoi

January 1, 2008
Date